

A stylized illustration of a green plant with several long, thin, upward-pointing leaves. The plant is positioned on the left side of the page, with its base resting on a dark green, rounded hill. The leaves are a vibrant green color, while the stems and the hill are a darker shade of green. The background is a light, neutral color.

Green Employment and Wages:

How Does Idaho
Stack up to
Other States?

IDAHO
DEPARTMENT OF LABOR
C.L. "BUTCH" OTTER, GOVERNOR
ROGER B. MADSEN, DIRECTOR

2011

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Introduction

An analysis of Idaho's green economy by the Idaho Department of Labor under a federal stimulus grant has found that the state ranks near the top nationally for the concentration of green employment.

This report focuses on employment and wages attributed to the green economy both in Idaho and around the country. Taxonomy of green occupations and their concentration ratios were derived from the 2010 Idaho Green Job Survey data and applied to all 50 states. This method of analysis provides a good starting point for comparing green employment and wages across the nation.

Other Key Findings

- Idaho ranks high in projected green employment growth for 2010-2018.
- Green job median wages are higher than the states' median wages for all employment, suggesting that green jobs pay better than average.

Taxonomy

No standard national green occupation data exists so data from the 2010 Idaho Green Job Survey were used to compare Idaho's green employment to other states. This survey classified a green job as one in which the work is essential to products or services in:

- Renewable Energy and Alternative Fuels
- Energy Efficiency and Conservation
- Sustainable Agriculture and Natural Resource Conservation
- Pollution and Waste Prevention, Reduction and Management and Environmental Cleanup.

From the information collected through the survey and secondary sources, an occupational taxonomy was developed. This occupation taxonomy defined 152 occupations in the 2010 Standard Occupation Classification as green. A crosswalk back to the 2000 classifications reduced the list to 144 unique six-digit occupations. Employment and wage data for all 50 states were then extracted from Economic Modeling Specialists Inc. using this taxonomy. Idaho's green taxonomy list is in Appendix 1 on page 11.

Idaho's green taxonomy may skew some analysis in favor of Idaho, but in the absence of a national standard, it at least allows a basic comparison across states. In the future, the U.S. Bureau of Labor Statistics will have data on green jobs for the nation as a whole. Comparisons of employment and wages using a nationally advocated taxonomy may yield different results.

Employment by Year

Instead of comparing total green employment among states, which is essentially a ranking based on population, percentages of green employment were compared. The total number of green jobs by state was divided by total state employment. This percentage describes the portion of each state's work force that is green under Idaho's taxonomy. By finding the percentages of each state's total jobs that are green and comparing them, population is less of a factor.

Idaho fared well when compared to other states' green employment percentages. Regionally and nationally, Idaho was second only to Wyoming in the percentage of green jobs to total state employment for 2002. By 2010, Idaho's green job percentage decreased almost 3 percentage points and was barely passed by Montana in the regional rankings, falling to fourth nationally behind North Dakota. This gap is projected to widen slightly by 2018, but Idaho holds on to the same place. Ranking for all states is in Appendix 2 on page 15.

Table 1: Percent of Total State Employment Identified as Green*

Rank	2002	Rank	2010	Rank	2018
1	Wyoming 27.6%	1	Wyoming 27.3%	1	Wyoming 27.1%
2	Idaho 27.1%	2	Montana 24.5%	2	Montana 24.0%
3	Montana 25.7%	4	Idaho 24.5%	4	Idaho 23.4%
8	Oregon 23.7%	13	Oregon 21.9%	17	Oregon 21.1%
23	Washington 21.8%	23	Washington 21.0%	23	Washington 20.6%
37	Utah 20.4%	34	Utah 19.5%	34	Utah 19.1%
44	Nevada 18.7%	49	Nevada 16.7%	49	Nevada 16.2%

*This is assuming that all employment in green occupations is green.

Source: EMSI Complete Employment — 4th Quarter 2010.

Farmers, ranchers, heavy and tractor-trailer truck drivers and general and operations managers account for most of Idaho's green jobs. These occupations top Idaho's green employment for each of the three years.

Table 2: Top Occupations, Assuming All Employment in Green Occupations is Green*

2002	2010	2018
SOC Occupation Title Total Employment	SOC Occupation Title Total Employment	SOC Occupation Title Total Employment
11-9012 Farmers and ranchers 22,059	11-9012 Farmers and ranchers 20,098	11-9012 Farmers and ranchers 19,162
53-3032 Truck drivers, heavy and tractor-trailer 13,796	53-3032 Truck drivers, heavy and tractor-trailer 14,615	53-3032 Truck drivers, heavy and tractor-trailer 16,758
11-1021 General and operations managers 13,275	11-1021 General and operations managers 13,049	11-1021 General and operations managers 13,913
45-209A Miscellaneous agricultural workers 12,608	45-209A Miscellaneous agricultural workers 11,487	11-9199 Managers, all other 12,821
47-2031 Carpenters 10,996	11-9199 Managers, all other 10,227	45-209A Miscellaneous agricultural workers 10,681
37-2011 Janitors and cleaners, except maids and housekeeping cleaners 9,872	37-2011 Janitors and cleaners, except maids and housekeeping cleaners 10,482	37-2011 Janitors and cleaners, except maids and housekeeping cleaners 11,381

*This is assuming that all employment in green occupations is green.

Source: EMSI Complete Employment — 4th Quarter 2010.

Perhaps a better way to calculate green employment is to factor in the concentration of green jobs within each occupation. During the Idaho Green Job Survey analyses, few occupations were found to have 100 percent green employment. In order to account for this, the weighted employment from the 2010 Idaho Green Job Survey was divided by the estimated total employment for each green occupation. This percentage, the concentration of green jobs per occupation, was then applied to every state's green occupation employment totals, leaving a more accurate calculation of each state's green workers. It is important to note that states won't necessarily have the same concentration percentages as Idaho, but for this study, they were assumed to be equal. It was also assumed that the concentration of green jobs within each occupation will remain constant over time.

Using this method, Idaho still fared well but not as high. With almost 2 percent of Idaho jobs designated green, Idaho comes in behind Wyoming and Washington in 2002. By 2010, however, Idaho is passed by Montana. Even though Idaho loses some ground each highlighted year, the state is still in the top 10 nationally. A table of rankings for all states is in Appendix 3 on page 16.

Table 3: Percent of Total State Employment Identified as Green by Concentration Percentage								
Rank	2002		Rank	2010		Rank	2018	
4	Wyoming	2.24%	3	Wyoming	2.27%	2	Wyoming	2.29%
5	Washington	2.05%	4	Washington	1.94%	5	Washington	1.87%
6	Idaho	1.97%	7	Montana	1.87%	6	Montana	1.83%
8	Montana	1.91%	8	Idaho	1.78%	8	Idaho	1.72%
9	Oregon	1.80%	12	Oregon	1.68%	13	Oregon	1.61%
34	Utah	1.51%	33	Utah	1.47%	32	Utah	1.47%
49	Nevada	1.34%	50	Nevada	1.18%	50	Nevada	1.13%

Source: EMSI Complete Employment — 4th Quarter 2010.

Similar to the first technique, the occupations with the most green employment in Idaho change little from year to year. Construction laborers, farmers, ranchers and miscellaneous agricultural workers* topped Idaho's list of green employment with respect to concentration.

Table 4: Top Occupations, Using Green Employment Concentration

2002			2010			2018		
SOC	Occupation Title	Total Employment	SOC	Occupation Title	Total Employment	SOC	Occupation Title	Total Employment
47-2061	Construction laborers	1,072	47-2061	Construction laborers	1,063	47-2061	Construction laborers	1,184
11-9012	Farmers and ranchers	860	11-9012	Farmers and ranchers	784	11-9012	Farmers and ranchers	747
45-209A	Miscellaneous agricultural workers	650	45-209A	Miscellaneous agricultural workers	592	45-209A	Miscellaneous agricultural workers	661
47-2152	Plumbers, pipefitters and steamfitters	552	53-3032	Truck drivers, heavy and tractor-trailer	569	53-3032	Truck drivers, heavy and tractor-trailer	653
53-3032	Truck drivers, heavy and tractor-trailer	537	47-2152	Plumbers, pipefitters and steamfitters	512	37-3011	Landscaping and grounds keeping workers	601
19-4021	Biological technicians	505	37-3011	Landscaping and grounds keeping workers	510	45-3011	Fishers and related fishing workers	592

Source: EMSI Complete Employment — 4th Quarter 2010.

Employment by Core Green Area

The Idaho Department of Labor's Green Job Definition includes four distinct core areas. To see how Idaho compares to other states in the nation by core area, the percentage breakdown of every state's green employment was calculated. The 2010 Idaho Green Job Survey found that occupations can be involved in different core green areas based on the nature of the work. To include that, the percentage breakdown of each occupation into core green areas found in the Green Job Survey was applied to every occupation's employment with respect to Idaho's green concentration levels. Just as the analysis done above, all states were assumed to have the same concentration and occupation breakdowns into core green areas that Idaho has.

Table 5: Idaho's Green Job Definition

A green job is one in which the work is essential to products or services in any of these core green areas:

- **Renewable Energy and Alternative Fuels**
- **Energy Efficiency and Conservation**
- **Sustainable Agriculture and Natural Resource Conservation**
- **Pollution and Waste Prevention, Reduction and Management and Environmental Cleanup**

2010 Idaho Green Jobs Survey report, Idaho Department of Labor.

*A combination of four Standard Occupation Classifications: 45-2091 agricultural equipment operators; 45-2092 farmworkers and laborers, crop, nursery and greenhouse; 45-2093 farmworkers, farm, ranch and aquacultural animals; 45-2099 agricultural workers, all other.

Idaho doesn't top the list in any one core green area, implying a mix of green jobs from the various areas. The majority of Idaho's green jobs fall into Sustainable Agriculture and Natural Resource Conservation and Pollution and Waste Prevention, Reduction and Management and Environmental Cleanup. When compared to the other states in 2010, Idaho ranked 19th in Sustainable Agriculture and Natural Resource Conservation and 24th in the Pollution and Waste Control category. The last two areas, Renewable Energy and Alternative Fuels and Energy Efficiency and Conservation, make up a smaller portion of Idaho's green jobs. When compared to the rest of the country, Idaho lands at 41st and 43rd respectively. Employment for the core green areas is shown for all states in Appendix 4 on page 17.

Table 6: Percent Breakdown of Green Employment into the Four Core Green Areas

Pollution and Waste Prevention, Reduction and Management and Environmental Cleanup			Sustainable Agriculture and Natural Resource Conservation		
Rank	State	%	Rank	State	%
10	Wyoming	29.7%	3	Montana	43.3%
11	Nevada	29.6%	5	Oregon	41.6%
13	Utah	29.3%	9	Wyoming	36.5%
24	Idaho	28.1%	10	Washington	36.2%
45	Montana	25.4%	19	Idaho	31.8%
47	Oregon	23.7%	36	Utah	27.2%
48	Washington	23.7%	44	Nevada	26.6%

Energy Efficiency and Conservation			Renewable Energy and Alternative Fuels		
Rank	State	%	Rank	State	%
3	Nevada	26.1%	8	Washington	22.4%
11	Utah	23.3%	23	Utah	20.2%
41	Idaho	19.3%	37	Nevada	17.6%
44	Oregon	18.4%	42	Oregon	16.2%
46	Wyoming	18.2%	43	Idaho	16.0%
47	Montana	18.1%	44	Wyoming	15.6%
48	Washington	17.7%	48	Montana	13.2%

Source: EMSI Complete Employment — 4th Quarter 2010.

Growth

Using forecasted total employment for 2018 from EMSI, percentage increases by state for green employment were compared. Idaho is near the top of the list for forecasted growth from 2010 to 2018. When comparing total employment of green occupations Idaho is 12th at a 10 percent projected increase. Leading the growth in Idaho are managers, all other; truck drivers, heavy and tractor-trailer; and miscellaneous agricultural workers. These occupations account for nearly 25 percent of the growth.

After the concentration percentages are applied, Idaho moves up to tenth with an 11 percent projected increase. By this measure, occupations that are adding the most jobs are fishers and related fishing workers, construction laborers and landscaping and grounds keeping workers. Growth in green jobs for all states is shown in Appendix 5 on page 18.

Regionally, Idaho is second only to Utah, which comes in at the top of both lists.

Table 7: 2010-2018 Green Jobs Growth by State

Rank	Using Total Employment*		Rank	Using Concentration Percentages	
1	Utah	16.8%	1	Utah	19.5%
12	Idaho	10.0%	10	Idaho	11.4%
18	Wyoming	9.0%	15	Wyoming	10.5%
26	Montana	7.5%	27	Montana	7.8%
27	Nevada	7.3%	33	Nevada	6.1%
28	Washington	7.1%	37	Oregon	5.2%
38	Oregon	5.5%	39	Washington	5.1%

*This is assuming that all employment in green occupations is green.

Source: EMSI Complete Employment — 4th Quarter 2010.

Table 8: Top Growth Occupations 2010-2018

Using Total Employment*			Using Concentration Percentages		
SOC	Occupation Title	Total Employment	SOC	Occupation Title	Total Employment
11-9199	Managers, all other	2,163	45-3011	Fishers and related fishing workers	132
53-3032	Truck drivers, heavy and tractor-trailer	2,143	47-2061	Construction laborers	122
45-209A	Miscellaneous agricultural workers	1,334	37-3011	Landscaping and groundskeeping workers	91
49-9042	Maintenance and repair workers, general	1,039	19-2041	Environmental scientists and specialists, including health	90
15-1081	Network systems and data communications analysts	1,010	53-3032	Truck drivers, heavy and tractor-trailer	83

*This is assuming that all employment in green occupations is green.

Source: EMSI Complete Employment — 4th Quarter 2010.

Wages

To compare wages, every state's median hourly wage for all occupations was subtracted from its median hourly wage for green occupations. Idaho is 41st with the median hourly wage for green jobs \$1.51 more than all occupations. A table showing this difference for all states is in Appendix 6 on page 19.

Notable among border states are Nevada at third and Washington at eighth. Nevada's green jobs median hourly wage is \$4.93 higher than the state's median hourly salary, while Washington's is \$3.94 higher. All states and the District of Columbia had higher green job median wages than total job median wages, suggesting that green jobs pay more than non-green jobs.

Table 9: Difference Between State Median Wage and Green Occupation Median Wage 2010		
Rank	State	Wage Difference
3	Nevada	\$4.93
8	Washington	\$3.94
18	Utah	\$3.03
21	Wyoming	\$2.61
29	Oregon	\$2.21
41	Idaho	\$1.51
44	Montana	\$1.36

Source: EMSI Complete Employment — 4th Quarter 2010.

Data Sources

Idaho Department of Labor contracts with Economic Modeling Specialists Inc. to obtain occupational employment estimates for all 50 states. EMSI bases occupation estimates “on EMSI’s industry data and regional staffing patterns taken from the Occupational Employment Statistics program (U.S. Bureau of Labor Statistics). Wage information is partially derived from the American Community Survey.” Idaho culled EMSI data for years 2002 through 2018.

There are differences between the data sets of the Idaho Department of Labor and EMSI. EMSI’s “complete” employment figures are higher than the department’s “covered” employment data, which includes only employment covered by the unemployment insurance program. EMSI’s “complete” employment estimates also include employment outside the unemployment insurance program like the self-employed and the military, pulling data from a variety of sources.

In addition to EMSI, the 2010 Idaho Green Job Survey collected data pertaining to the employment, employment concentrations, core green area breakdowns and wages as well as the basis for the green occupation taxonomy used.

Appendix 1: Idaho's Green Taxonomy

Idaho's Green Taxonomy: Modified to Work with EMSI data		
SOC Code	Description	2010 Idaho Median Hourly Wage
11-1021	General and operations managers	\$29.92
11-3051	Industrial production managers	\$34.01
11-9011	Farm, ranch, and other agricultural managers	\$18.12
11-9012	Farmers and ranchers	\$7.57
11-9021	Construction managers	\$14.32
11-9041	Engineering managers	\$49.37
11-9121	Natural sciences managers	\$40.82
11-9199	Managers, all other	\$13.69
13-1021	Purchasing agents and buyers, farm products	\$19.62
13-1041	Compliance officers, except agriculture, construction, health and safety, and transportation	\$20.53
13-1199	Business operation specialists, all other	\$24.30
13-2099	Financial specialists, all other	\$23.57
15-1031	Computer software engineers, applications	\$31.65
15-1081	Network systems and data communications analysts	\$13.29
15-2041	Statisticians	\$27.08
15-2099	Mathematical scientists, all other	\$15.27
17-1011	Architects, except landscape and naval	\$25.20
17-1012	Landscape architects	\$19.58
17-2011	Aerospace engineers	\$35.46
17-2041	Chemical engineers	\$50.95
17-2051	Civil engineers	\$29.75
17-2071	Electrical engineers	\$39.00
17-2072	Electronics engineers, except computer	\$34.43
17-2081	Environmental engineers	\$29.89
17-2111	Health and safety engineers, except mining safety engineers and inspectors	\$41.93
17-2112	Industrial engineers	\$38.32
17-2131	Materials engineers	\$40.30
17-2141	Mechanical engineers	\$38.46
17-2151	Mining and geological engineers, including mining safety engineers	\$29.45
17-2161	Nuclear engineers	\$47.60
17-2199	Engineers, all other	\$34.09
17-3011	Architectural and civil drafters	\$20.29
17-3013	Mechanical drafters	\$23.20

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APPENDIX 1

Idaho's Green Taxonomy: Modified to Work with EMSI Data (cont.)		
SOC Code	Description	2010 Idaho Median Hourly Wage
17-3019	Drafters, all other	\$19.36
17-3022	Civil engineering technicians	\$20.23
17-3023	Electrical and electronic engineering technicians	\$24.94
17-3025	Environmental engineering technicians	\$21.31
17-3026	Industrial engineering technicians	\$19.79
17-3029	Engineering technicians, except drafters, all other	\$21.14
19-1013	Soil and plant Scientists	\$18.42
19-1022	Microbiologists	\$32.71
19-1023	Zoologists and wildlife biologists	\$27.15
19-1029	Biological scientists, all other	\$26.30
19-1031	Conservation scientists	\$27.35
19-1032	Foresters	\$26.38
19-1042	Medical scientists, except epidemiologists	\$22.91
19-2012	Physicists	\$48.98
19-2031	Chemists	\$35.79
19-2032	Materials scientists	\$25.84
19-2041	Environmental scientists and specialists, including health	\$27.45
19-2042	Geoscientists, except hydrologists and geographers	\$26.18
19-2043	Hydrologists	\$29.86
19-2099	Physical scientists, all other	\$28.08
19-3051	Urban and regional planners	\$24.05
19-3091	Anthropologists and archeologists	\$26.15
19-3099	Social scientists and related workers, all other	\$20.32
19-4011	Agricultural and food science technicians	\$14.46
19-4021	Biological technicians	\$13.84
19-4031	Chemical technicians	\$14.32
19-4041	Geological and petroleum technicians	\$11.18
19-4051	Nuclear technicians	\$27.51
19-4061	Social science research assistants	\$12.98
19-4091	Environmental science and protection technicians, including health	\$11.87
19-4093	Forest and conservation technicians	\$14.91
19-4099	Life, physical, and social science technicians, all other	\$16.64
25-2032	Vocational education teachers, secondary school	\$22.26
25-9021	Farm and home management advisors	\$24.10
25-9031	Instructional coordinators	\$19.95
29-9011	Occupational health and safety specialists	\$27.12
29-9012	Occupational health and safety technicians	\$10.04
33-1021	First-line supervisors/managers of fire fighting and prevention workers	\$27.45
33-2011	Fire fighters	\$16.57

Continued on next page.

APPENDIX 1

Idaho's Green Taxonomy: Modified to Work with EMSI Data (cont.)

SOC Code	Description	2010 Idaho Median Hourly Wage
33-2022	Forest fire inspectors and prevention specialists	--
33-3031	Fish and game wardens	\$22.91
37-1012	First-line supervisors/managers of landscaping, lawn service, and grounds keeping workers	\$12.71
37-2011	Janitors and cleaners, except maids and housekeeping cleaners	\$10.24
37-2019	Building cleaning workers, all other	\$12.72
37-3011	Landscaping and grounds keeping workers	\$10.30
37-3012	Pesticide handlers, sprayers, and applicators, vegetation	\$12.24
37-3013	Tree trimmers and pruners	\$11.06
39-6021	Tour guides and escorts	\$10.61
39-9032	Recreation workers	\$9.27
41-4011	Sales representatives, wholesale and manufacturing, technical and scientific products	\$28.58
41-9031	Sales engineers	\$34.92
45-209A	Miscellaneous agricultural workers	\$10.48
45-1099	Supervisors, farming, fishing, and forestry workers	\$13.97
45-2011	Agricultural inspectors	\$13.01
45-3011	Fishers and related fishing workers	\$7.81
45-4011	Forest and conservation workers	\$12.10
45-4021	Fallers	\$15.19
45-4022	Logging equipment operators	\$13.86
45-4029	Logging workers, all other	\$14.06
47-1011	First-line supervisors/managers of construction trades and extraction workers	\$19.41
47-2031	Carpenters	\$14.03
47-2051	Cement masons and concrete finishers	\$15.28
47-2061	Construction laborers	\$12.15
47-2073	Operating engineers and other construction equipment operators	\$17.34
47-2111	Electricians	\$19.45
47-2131	Insulation workers, floor, ceiling, and wall	\$13.57
47-2132	Insulation workers, mechanical	\$15.09
47-2152	Plumbers, pipefitters, and steamfitters	\$16.88
47-2181	Roofers	\$13.43
47-2211	Sheet metal workers	\$18.88
47-3012	Helpers, carpenters	\$11.46
47-3019	Helpers, construction trades, all other	\$11.19
47-4011	Construction and building inspectors	\$20.13
47-4041	Hazardous materials removal workers	\$22.80

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APPENDIX 1

Idaho's Green Taxonomy: Modified to Work with EMSI Data (cont.)		
SOC Code	Description	2010 Idaho Median Hourly Wage
47-4099	Construction and related workers, all other	\$25.70
47-5021	Earth drillers, except oil and gas	\$16.40
49-1011	First-line supervisors/managers of mechanics, installers, and repairers	\$22.38
49-2011	Computer, automated teller, and office machine repairers	\$14.56
49-2095	Electrical and electronics repairers, powerhouse, substation, and relay	\$28.97
49-3022	Automotive glass installers and repairers	\$12.14
49-3023	Automotive service technicians and mechanics	\$15.51
49-3031	Bus and truck mechanics and diesel engine specialists	\$17.17
49-3041	Farm equipment mechanics	\$18.64
49-3091	Bicycle repairers	\$10.69
49-3093	Tire repairers and changers	\$11.12
49-9021	Heating, air conditioning, and refrigeration mechanics and installers	\$15.00
49-9031	Home appliance repairers	\$11.13
49-9041	Industrial machinery mechanics	\$18.89
49-9042	Maintenance and repair workers, general	\$13.65
49-9044	Millwrights	\$21.17
49-9098	Helpers--Installation, maintenance, and repair workers	\$10.54
49-9099	Installation, maintenance, and repair workers, all other	\$10.99
51-2022	Electrical and electronic equipment assemblers	\$11.83
51-2099	Assemblers and fabricators, all other	\$11.07
51-4121	Welders, cutters, solderers, and brazers	\$14.16
51-8011	Nuclear power reactor operators	--
51-8013	Power plant operators	\$22.89
51-8021	Stationary engineers and boiler operators	\$18.28
51-8031	Water and liquid waste treatment plant and system operators	\$15.45
51-8099	Plant and system operators, all other	\$31.77
51-9023	Mixing and blending machine setters, operators, and tenders	\$14.97
51-9041	Extruding, forming, pressing, and compacting machine setters, operators and tenders	\$15.35
51-9051	Furnace, kiln, oven, drier, and kettle operators and tenders	\$16.20
51-9197	Tire builders	\$11.37
51-9199	Production workers, all other	\$12.41
53-2012	Commercial pilots	\$18.41
53-3032	Truck drivers, heavy and tractor-trailer	\$15.82
53-7021	Crane and tower operators	\$21.38
53-7032	Excavating and loading machine and dragline operators	\$16.12
53-7051	Industrial truck and tractor operators	\$13.67
53-7081	Refuse and recyclable material collectors	\$12.80
Statewide		\$16.63

Source: EMSI Complete Employment — 4th Quarter 2010.
2010 Idaho Green Jobs Survey Report, Idaho Department of Labor

Appendix 2: Percent of State Employment Identified as Green

Percent of Total State Employment Identified as Green*								
2002			2010			2018		
Rank	State/Area	% Green Employment	Rank	State/Area	% Green Employment	Rank	State/Area	% Green Employment
1	Wyoming	27.6%	1	Wyoming	27.3%	1	Wyoming	27.1%
2	Idaho	27.1%	2	Montana	24.5%	2	Montana	24.0%
3	Montana	25.7%	3	North Dakota	24.5%	3	North Dakota	23.9%
4	North Dakota	24.5%	4	Idaho	24.5%	4	Idaho	23.4%
5	Arkansas	24.5%	5	Arkansas	23.5%	5	Oklahoma	23.2%
6	South Dakota	23.9%	6	Iowa	23.2%	6	Arkansas	23.1%
7	Iowa	23.7%	7	Oklahoma	23.2%	7	Iowa	22.8%
8	Oregon	23.7%	8	Alaska	23.0%	8	Alaska	22.7%
9	Alaska	23.6%	9	South Dakota	22.9%	9	South Dakota	22.3%
10	Kentucky	23.2%	10	Nebraska	22.1%	10	Kansas	21.9%
11	Oklahoma	23.1%	11	Kansas	22.0%	11	West Virginia	21.7%
12	Maine	22.9%	12	Maine	22.0%	12	Maine	21.7%
13	Colorado	22.7%	13	Oregon	21.9%	13	Nebraska	21.7%
14	Nebraska	22.6%	14	New Mexico	21.9%	14	New Mexico	21.6%
15	Tennessee	22.3%	15	Kentucky	21.8%	15	Alabama	21.2%
16	Alabama	22.3%	16	West Virginia	21.7%	16	Kentucky	21.2%
17	Kansas	22.3%	17	Alabama	21.6%	17	Oregon	21.1%
18	Minnesota	22.3%	18	Louisiana	21.6%	18	Louisiana	21.1%
19	New Mexico	22.2%	19	Mississippi	21.4%	19	Mississippi	20.9%
20	Michigan	22.1%	20	Colorado	21.1%	20	Colorado	20.8%
21	Vermont	22.1%	21	Texas	21.1%	21	Texas	20.8%
22	New Hampshire	21.9%	22	Tennessee	21.1%	22	New Hampshire	20.7%
23	Washington	21.8%	23	Washington	21.0%	23	Washington	20.6%
24	Texas	21.7%	24	New Hampshire	20.9%	24	Wisconsin	20.5%
25	West Virginia	21.7%	25	Minnesota	20.8%	25	District of Columbia	20.4%
26	Missouri	21.7%	26	Vermont	20.8%	26	Tennessee	20.3%
27	Louisiana	21.6%	27	Wisconsin	20.8%	27	Vermont	20.3%
28	Wisconsin	21.6%	28	District of Columbia	20.8%	28	Minnesota	20.2%
29	Mississippi	21.5%	29	Indiana	20.5%	29	Indiana	20.2%
30	Indiana	21.3%	30	Michigan	20.4%	30	Virginia	20.1%
31	Virginia	21.1%	31	Missouri	20.3%	31	Michigan	20.0%
32	District of Columbia	21.0%	32	Virginia	20.3%	32	Missouri	19.8%
33	North Carolina	20.7%	33	Maryland	20.0%	33	Maryland	19.7%
34	Maryland	20.7%	34	Utah	19.5%	34	Utah	19.1%
35	Arizona	20.7%	35	North Carolina	19.4%	35	North Carolina	19.1%
36	California	20.7%	36	Illinois	19.2%	36	Illinois	18.9%
37	Utah	20.4%	37	California	19.2%	37	Ohio	18.9%
38	Delaware	20.3%	38	Ohio	19.2%	38	California	18.8%
39	Illinois	20.3%	39	South Carolina	19.0%	39	South Carolina	18.7%
40	South Carolina	20.3%	40	Georgia	19.0%	40	Georgia	18.5%
41	Georgia	20.1%	41	Arizona	18.8%	41	Arizona	18.4%
42	Ohio	20.0%	42	Hawaii	18.3%	42	Hawaii	18.4%
43	Florida	19.5%	43	Florida	18.3%	43	Florida	18.2%
44	Nevada	18.7%	44	Pennsylvania	18.0%	44	Pennsylvania	17.8%
45	Pennsylvania	18.6%	45	Delaware	17.7%	45	Connecticut	17.2%
46	New Jersey	18.5%	46	Connecticut	17.4%	46	Massachusetts	17.2%
47	Connecticut	18.4%	47	Massachusetts	17.4%	47	Delaware	17.2%
48	Hawaii	18.3%	48	New Jersey	17.3%	48	New Jersey	17.1%
49	Massachusetts	18.3%	49	Nevada	16.7%	49	Nevada	16.2%
50	Rhode Island	16.4%	50	Rhode Island	16.0%	50	Rhode Island	16.0%
51	New York	16.2%	51	New York	15.4%	51	New York	14.9%

*This is assuming that all employment in green occupations is green.

Source: EMSI Complete Employment — 4th Quarter 2010.

Appendix 3: Percent of State Employment Identified as Green by Concentration

Percent of Total State Employment Identified as Green by Concentration Percentage								
2002			2010			2018		
Rank	State	% Green Employment	Rank	State	% Green Employment	Rank	State	% Green Employment
1	Alaska	4.02%	1	Alaska	3.75%	1	Alaska	3.52%
2	Maine	2.49%	2	Maine	2.33%	2	Wyoming	2.29%
3	Delaware	2.34%	3	Wyoming	2.27%	3	Maine	2.23%
4	Wyoming	2.24%	4	Washington	1.94%	4	New Mexico	1.87%
5	Washington	2.05%	5	New Mexico	1.90%	5	Washington	1.87%
6	Idaho	1.97%	6	Louisiana	1.89%	6	Montana	1.83%
7	Louisiana	1.96%	7	Montana	1.87%	7	Louisiana	1.79%
8	Montana	1.91%	8	Idaho	1.78%	8	Idaho	1.72%
9	Oregon	1.80%	9	Delaware	1.74%	9	Maryland	1.70%
10	New Mexico	1.78%	10	Maryland	1.70%	10	Alabama	1.67%
11	Michigan	1.76%	11	Alabama	1.69%	11	West Virginia	1.65%
12	Colorado	1.76%	12	Oregon	1.68%	12	Colorado	1.63%
13	Maryland	1.73%	13	Colorado	1.65%	13	Oregon	1.61%
14	Alabama	1.73%	14	West Virginia	1.65%	14	North Dakota	1.61%
15	Vermont	1.71%	15	Vermont	1.63%	15	Vermont	1.61%
16	West Virginia	1.66%	16	Texas	1.61%	16	Texas	1.59%
17	Texas	1.66%	17	North Dakota	1.61%	17	Virginia	1.59%
18	Virginia	1.64%	18	District of Columbia	1.60%	18	South Dakota	1.58%
19	South Carolina	1.63%	19	Virginia	1.58%	19	Kansas	1.58%
20	District of Columbia	1.62%	20	Arkansas	1.57%	20	Delaware	1.57%
21	Arkansas	1.61%	21	Kansas	1.57%	21	District of Columbia	1.55%
22	Massachusetts	1.59%	22	South Dakota	1.56%	22	Arkansas	1.55%
23	New Hampshire	1.56%	23	Michigan	1.56%	23	South Carolina	1.53%
24	Kansas	1.56%	24	South Carolina	1.53%	24	Massachusetts	1.53%
25	Indiana	1.55%	25	Massachusetts	1.53%	25	Oklahoma	1.53%
26	Arizona	1.55%	26	Mississippi	1.53%	26	Iowa	1.52%
27	California	1.55%	27	Iowa	1.51%	27	Michigan	1.51%
28	South Dakota	1.54%	28	Indiana	1.49%	28	Mississippi	1.50%
29	North Dakota	1.54%	29	New Hampshire	1.49%	29	New Hampshire	1.48%
30	Wisconsin	1.53%	30	Oklahoma	1.49%	30	Indiana	1.48%
31	North Carolina	1.53%	31	Wisconsin	1.49%	31	Wisconsin	1.48%
32	Mississippi	1.52%	32	Hawaii	1.48%	32	Utah	1.47%
33	Kentucky	1.52%	33	Utah	1.47%	33	Kentucky	1.45%
34	Utah	1.51%	34	California	1.45%	34	Hawaii	1.45%
35	Florida	1.50%	35	Kentucky	1.45%	35	California	1.43%
36	Hawaii	1.50%	36	North Carolina	1.43%	36	Nebraska	1.42%
37	Iowa	1.50%	37	Tennessee	1.41%	37	North Carolina	1.41%
38	Tennessee	1.48%	38	Arizona	1.40%	38	Florida	1.38%
39	New Jersey	1.48%	39	Ohio	1.40%	39	Tennessee	1.38%
40	Ohio	1.48%	40	Nebraska	1.40%	40	Ohio	1.38%
41	Minnesota	1.45%	41	Florida	1.39%	41	Arizona	1.37%
42	Connecticut	1.45%	42	Minnesota	1.36%	42	Minnesota	1.35%
43	Oklahoma	1.43%	43	Pennsylvania	1.35%	43	Connecticut	1.34%
44	Pennsylvania	1.41%	44	Connecticut	1.35%	44	Pennsylvania	1.34%
45	Missouri	1.40%	45	Rhode Island	1.34%	45	Rhode Island	1.32%
46	Rhode Island	1.40%	46	New Jersey	1.34%	46	Missouri	1.31%
47	Georgia	1.39%	47	Missouri	1.33%	47	New Jersey	1.30%
48	Nebraska	1.37%	48	Georgia	1.31%	48	Georgia	1.28%
49	Nevada	1.34%	49	Illinois	1.24%	49	Illinois	1.23%
50	Illinois	1.34%	50	Nevada	1.18%	50	Nevada	1.13%
51	New York	1.21%	51	New York	1.16%	51	New York	1.12%

Source: EMSI Complete Employment — 4th Quarter 2010.

Appendix 4: Percent of Employment by Core Green Areas

Percent Breakdown of Each State's Green Employment into the Four Core Green Areas

Pollution and Waste Prevention, Reduction and Management and Environmental Cleanup			Sustainable Agriculture and Natural Resource Conservation			Energy Efficiency and Conservation			Renewable Energy and Alternative Fuels		
Rank	State/Area	% Empl	Rank	State/Area	% Empl	Rank	State/Area	% Empl	Rank	State/Area	% Empl
1	New Mexico	33.6%	1	Alaska	62.9%	1	Florida	27.9%	1	District of Columbia	29.7%
2	West Virginia	32.7%	2	Maine	51.2%	2	New Hampshire	26.6%	2	Michigan	25.8%
3	South Carolina	31.0%	3	Montana	43.3%	3	Nevada	26.1%	3	Connecticut	24.5%
4	New York	30.5%	4	South Dakota	41.9%	4	Virginia	24.1%	4	Ohio	24.0%
5	Pennsylvania	30.5%	5	Oregon	41.6%	5	New York	24.1%	5	Maryland	23.3%
6	Tennessee	30.4%	6	North Dakota	38.6%	6	Rhode Island	23.8%	6	Alabama	22.8%
7	Illinois	29.9%	7	Hawaii	37.4%	7	Connecticut	23.7%	7	Indiana	22.7%
8	New Jersey	29.8%	8	Oklahoma	36.8%	8	Louisiana	23.6%	8	Washington	22.4%
9	Indiana	29.8%	9	Wyoming	36.5%	9	Arizona	23.4%	9	Kansas	22.1%
10	Wyoming	29.7%	10	Washington	36.2%	10	Georgia	23.4%	10	California	22.0%
11	Nevada	29.6%	11	Louisiana	34.3%	11	Utah	23.3%	11	Virginia	21.9%
12	Nebraska	29.5%	12	Massachusetts	34.0%	12	Illinois	23.3%	12	Delaware	21.8%
13	Utah	29.3%	13	Mississippi	33.7%	13	Pennsylvania	22.9%	13	Illinois	21.5%
14	Vermont	29.2%	14	Nebraska	33.0%	14	Tennessee	22.9%	14	South Carolina	21.4%
15	Georgia	29.1%	15	Iowa	32.8%	15	Missouri	22.6%	15	Arizona	20.9%
16	Iowa	28.8%	16	Minnesota	32.5%	16	Nebraska	22.3%	16	New Jersey	20.8%
17	District of Columbia	28.8%	17	Arkansas	32.3%	17	Texas	22.3%	17	Kentucky	20.7%
18	New Hampshire	28.3%	18	Rhode Island	32.0%	18	Alabama	22.2%	18	Georgia	20.6%
19	Wisconsin	28.3%	19	Idaho	31.8%	19	Indiana	22.0%	19	Pennsylvania	20.6%
20	Arkansas	28.3%	20	Wisconsin	31.4%	20	North Carolina	21.8%	20	Texas	20.4%
21	Ohio	28.2%	21	Kansas	31.3%	21	Vermont	21.7%	21	Minnesota	20.4%
22	North Carolina	28.1%	22	North Carolina	31.1%	22	Mississippi	21.6%	22	New York	20.3%
23	Arizona	28.1%	23	Missouri	31.1%	23	Oklahoma	21.6%	23	Utah	20.2%
24	Idaho	28.1%	24	Colorado	30.9%	24	Maryland	21.5%	24	Colorado	20.1%
25	North Dakota	28.0%	25	California	30.9%	25	Arkansas	21.3%	25	Wisconsin	20.1%
26	Minnesota	28.0%	26	Kentucky	30.8%	26	Michigan	21.2%	26	New Mexico	20.0%
27	Maryland	27.9%	27	Vermont	29.9%	27	Iowa	21.1%	27	Tennessee	19.9%
28	Delaware	27.9%	28	Texas	29.8%	28	Colorado	21.1%	28	New Hampshire	19.8%
29	Missouri	27.9%	29	Delaware	29.4%	29	Ohio	21.0%	29	Massachusetts	19.8%
30	Colorado	27.8%	30	Alabama	29.1%	30	Delaware	20.9%	30	West Virginia	19.6%
31	Kentucky	27.8%	31	Florida	28.8%	31	South Carolina	20.9%	31	Vermont	19.2%
32	Texas	27.6%	32	West Virginia	28.7%	32	New Jersey	20.8%	32	North Carolina	19.0%
33	California	27.4%	33	New Jersey	28.6%	33	Massachusetts	20.7%	33	Louisiana	18.8%
34	Mississippi	27.2%	34	District of Columbia	27.7%	34	Kentucky	20.7%	34	Missouri	18.4%
35	Hawaii	27.2%	35	Arizona	27.6%	35	Wisconsin	20.2%	35	Rhode Island	18.2%
36	South Dakota	26.9%	36	Utah	27.2%	36	Hawaii	20.1%	36	Arkansas	18.1%
37	Virginia	26.8%	37	Maryland	27.2%	37	Kansas	20.1%	37	Nevada	17.6%
38	Kansas	26.5%	38	New Mexico	27.2%	38	California	19.7%	38	Mississippi	17.5%
39	Michigan	26.4%	39	Virginia	27.2%	39	West Virginia	19.6%	39	Iowa	17.2%
40	Florida	26.3%	40	Georgia	27.0%	40	South Dakota	19.4%	40	Florida	17.0%
41	Rhode Island	26.0%	41	Tennessee	26.8%	41	Idaho	19.3%	41	Oklahoma	16.3%
42	Connecticut	26.0%	42	South Carolina	26.8%	42	New Mexico	19.2%	42	Oregon	16.2%
43	Alabama	25.9%	43	Ohio	26.7%	43	Minnesota	19.2%	43	Idaho	16.0%
44	Massachusetts	25.5%	44	Nevada	26.6%	44	Oregon	18.4%	44	Wyoming	15.6%
45	Montana	25.4%	45	Michigan	26.6%	45	North Dakota	18.2%	45	Hawaii	15.3%
46	Oklahoma	25.3%	46	Pennsylvania	26.1%	46	Wyoming	18.2%	46	Nebraska	15.2%
47	Oregon	23.7%	47	Connecticut	25.8%	47	Montana	18.1%	47	North Dakota	15.1%
48	Washington	23.7%	48	Indiana	25.6%	48	Washington	17.7%	48	Montana	13.2%
49	Louisiana	23.3%	49	Illinois	25.3%	49	Maine	17.1%	49	Maine	12.2%
50	Maine	19.6%	50	New Hampshire	25.3%	50	District of Columbia	13.8%	50	South Dakota	11.9%
51	Alaska	16.3%	51	New York	25.2%	51	Alaska	11.3%	51	Alaska	9.5%

Source: EMSI Complete Employment — 4th Quarter 2010.

Appendix 5: Percent Green Job Growth by State 2010-2018

Green Jobs Growth by State 2010-2018					
Using Total Employment*			Using Concentration Percentages		
Rank	State	% Growth	Rank	State	% Growth
1	Utah	16.8%	1	Utah	19.5%
2	Texas	16.0%	2	Texas	16.3%
3	Florida	13.9%	3	Florida	13.9%
4	Virginia	12.7%	4	Virginia	13.8%
5	Arizona	12.1%	5	South Dakota	13.3%
6	North Carolina	11.6%	6	Oklahoma	12.2%
7	Alabama	10.7%	7	Arizona	11.8%
8	Georgia	10.6%	8	North Carolina	11.7%
9	Mississippi	10.4%	9	Alabama	11.5%
10	New Mexico	10.4%	10	Idaho	11.4%
11	Arkansas	10.1%	11	Georgia	11.3%
12	Idaho	10.0%	12	Mississippi	10.6%
13	Oklahoma	9.7%	13	Arkansas	10.6%
14	Maryland	9.3%	14	South Carolina	10.6%
15	Kansas	9.1%	15	Wyoming	10.5%
16	South Dakota	9.1%	16	New Mexico	10.4%
17	South Carolina	9.1%	17	Kansas	10.4%
18	Wyoming	9.0%	18	Nebraska	10.4%
19	Colorado	8.9%	19	Maryland	10.1%
20	Rhode Island	8.8%	20	Colorado	9.0%
21	Hawaii	8.6%	21	Iowa	8.8%
22	Connecticut	8.4%	22	Illinois	8.7%
23	New Hampshire	7.9%	23	Connecticut	8.5%
24	Illinois	7.7%	24	New Hampshire	8.5%
25	California	7.6%	25	California	8.4%
26	Montana	7.5%	26	North Dakota	8.0%
27	Nevada	7.3%	27	Montana	7.8%
28	Washington	7.1%	28	Kentucky	7.6%
29	Louisiana	6.9%	29	Minnesota	7.1%
30	Nebraska	6.8%	30	Massachusetts	6.6%
31	Alaska	6.8%	31	Rhode Island	6.6%
32	New Jersey	6.5%	32	Indiana	6.4%
33	District of Columbia	6.3%	33	Nevada	6.1%
34	Delaware	6.2%	34	Hawaii	5.8%
35	Massachusetts	6.0%	35	Vermont	5.3%
36	Iowa	5.8%	36	Tennessee	5.3%
37	Indiana	5.8%	37	Oregon	5.2%
38	Oregon	5.5%	38	West Virginia	5.1%
39	North Dakota	5.4%	39	Washington	5.1%
40	Minnesota	5.2%	40	District of Columbia	4.9%
41	West Virginia	5.0%	41	New Jersey	4.7%
42	Michigan	4.7%	42	Ohio	4.4%
43	Ohio	4.7%	43	Michigan	3.9%
44	Vermont	4.2%	44	Wisconsin	3.9%
45	Kentucky	4.2%	45	Louisiana	3.6%
46	Tennessee	3.8%	46	Pennsylvania	3.4%
47	Pennsylvania	3.5%	47	Missouri	3.2%
48	Maine	3.2%	48	New York	2.9%
49	Wisconsin	3.2%	49	Alaska	1.3%
50	New York	2.6%	50	Maine	-0.3%
51	Missouri	2.3%	51	Delaware	-1.5%

*This is assuming that all employment in green occupations is green.

Source: EMSI Complete Employment — 4th Quarter 2010.

Appendix 6: Difference from State Median Salary

Difference from State Median Salary, 2010				
Rank	State/Area	\$ Difference	Green Median	State Median
1	District of Columbia	\$5.94	\$37.67	\$31.73
2	New Jersey	\$4.98	\$25.65	\$20.67
3	Nevada	\$4.93	\$21.78	\$16.85
4	Maryland	\$4.35	\$24.00	\$19.65
5	Connecticut	\$4.30	\$25.53	\$21.23
6	California	\$4.28	\$24.38	\$20.10
7	Colorado	\$3.95	\$22.23	\$18.28
8	Washington	\$3.94	\$23.38	\$19.44
9	Alaska	\$3.85	\$24.00	\$20.15
10	Hawaii	\$3.75	\$21.43	\$17.68
11	Delaware	\$3.55	\$22.76	\$19.21
12	Virginia	\$3.55	\$22.80	\$19.25
13	Massachusetts	\$3.50	\$25.37	\$21.87
14	New Hampshire	\$3.36	\$21.41	\$18.05
15	Michigan	\$3.32	\$20.78	\$17.46
16	Illinois	\$3.32	\$22.24	\$18.92
17	Arizona	\$3.23	\$19.97	\$16.74
18	Utah	\$3.03	\$18.79	\$15.76
19	Texas	\$2.70	\$20.09	\$17.39
20	Louisiana	\$2.62	\$18.12	\$15.50
21	Wyoming	\$2.61	\$19.19	\$16.58
22	New Mexico	\$2.45	\$18.45	\$16.00
23	New York	\$2.38	\$23.55	\$21.17
24	Rhode Island	\$2.35	\$21.25	\$18.90
25	Minnesota	\$2.29	\$20.61	\$18.32
26	North Carolina	\$2.29	\$18.59	\$16.30
27	Pennsylvania	\$2.27	\$19.81	\$17.54
28	Ohio	\$2.23	\$19.01	\$16.78
29	Oregon	\$2.21	\$19.57	\$17.36
30	South Carolina	\$2.20	\$17.27	\$15.07
31	Indiana	\$2.18	\$18.20	\$16.02
32	Alabama	\$2.18	\$17.65	\$15.47
33	Wisconsin	\$2.10	\$18.71	\$16.61
34	North Dakota	\$1.99	\$17.19	\$15.20
35	Georgia	\$1.85	\$18.63	\$16.78
36	Kansas	\$1.81	\$17.91	\$16.10
37	Missouri	\$1.78	\$17.98	\$16.20
38	Florida	\$1.73	\$17.58	\$15.85
39	Nebraska	\$1.69	\$17.24	\$15.55
40	South Dakota	\$1.67	\$15.93	\$14.26
41	Idaho	\$1.51	\$16.63	\$15.12
42	West Virginia	\$1.44	\$16.05	\$14.61
43	Iowa	\$1.40	\$16.79	\$15.39
44	Montana	\$1.36	\$15.38	\$14.02
45	Tennessee	\$1.32	\$16.86	\$15.54
46	Oklahoma	\$1.24	\$16.27	\$15.03
47	Mississippi	\$1.05	\$15.22	\$14.17
48	Maine	\$0.96	\$16.59	\$15.63
49	Arkansas	\$0.69	\$15.18	\$14.49
50	Vermont	\$0.65	\$16.86	\$16.21
51	Kentucky	\$0.57	\$16.23	\$15.66

Source: EMSI Complete Employment — 4th Quarter 2010.